

Claims

1. A firearms safety device for securing a firearm against unauthorised use,
comprising:
5 at least one locking portion (20) that is insertable into a barrel (100) and/or a
cartridge chamber of the firearm and is optionally lockable and/or unlockable
therein and optionally clampable within and/or detachable from the barrel (100);
a control unit (10) which is capable of authenticating a user and, upon authentication
of the user, locks and/or unlocks or clamps at least the locking portion (20) within
10 the barrel (100) of the firearm and or makes the safety device detachable;
the safety device (1) being designed such that it is completely insertable into the
barrel (100) and/or the cartridge chamber for putting the firearm at safe.
2. A firearms safety device for securing a firearm against unauthorised use,
15 comprising:
at least one locking portion (20) that is insertable into a barrel (100) and/or a
cartridge chamber of the firearm and is optionally lockable and/or unlockable
therein and optionally clampable within and/or detachable from the barrel (100);
a transmission means for coupling to an operating means (2-6) via which a user can
20 optionally lock and/or unlock or clamp said safety device (1) from outside and/or
make it detachable;
a control unit (10) that is capable of authenticating a user; and
an activation means (26) which, upon authentication by the control unit (10),
enables or prevents locking and/or unlocking or clamping and/or detaching via the
25 transmission means (40a).
3. A firearms safety device for securing a firearm against unauthorised use,
comprising:
at least one locking portion (20) that is insertable into a barrel (100) and/or a
30 cartridge chamber of the firearm and is optionally lockable and/or unlockable
therein and optionally clampable within and/or detachable from the barrel (100);
a severance protection (41) that is arranged in the locking portion (20) and
comprises at least one inclined element (41) provided in said locking portion which

inclined element is designed and positioned such that it expands the locking portion upon locking or clamping at least partially radially in case of an essentially axial force caused by manipulation so that the locking portion is locked or clamped even farther down the barrel (100) and/or the cartridge chamber.

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4. The safety device according to at least two of the preceding claims.

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5. The safety device according to any of the preceding claims, wherein the control-unit (10) is electronic and is arranged within an area within the safety device (1) which is protected against unauthorised manipulation.

6. The safety device according to claim 2, 4 or 5, wherein the activation means comprises a deactivation means (26).

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7. The safety device according to any of claims 3 to 6, wherein the severance protection means (41) is provided with a plurality of plate-shaped, inclined elements with graded expansibility.

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8. The safety device according to claim 7, wherein the elements with lower expansibility generate a counterforce that is necessary to expand the elements with higher expansibility in case of an axial force caused by manipulation.

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9. The safety device according to any of the preceding claims wherein the safety device is provided with at least one armouring (40a, 40b) which protects the safety device against unauthorised manipulation from outside.

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10. The safety device according to any of the preceding claims, wherein said safety device is provided with a first armouring (40a) protecting said safety device, if inserted into the barrel (100), against unauthorised manipulation from the barrel-muzzle end and a second armouring (40b) protecting said safety device, if inserted into the barrel (100), against unauthorised manipulation from the cartridge chamber end.

11. The safety device according to claim 9 or 10, wherein at least one armouring (40) is provided with a ceramic material or diamond.
- 5 12. The safety device according to any of claims 9 to 11, wherein an essentially axial mechanical energy manipulatively applied from outside to the armouring is absorbed by means behind the armouring such that the resultant force on the armouring is reduced which is thus prevented from breaking into pieces.
- 10 13. The safety device according to claim 12, wherein the safety device is designed such that the manipulatively applied mechanical energy is used to increase the clamping force applied to the safety device within the barrel.
14. The safety device according to claim 12 or 13, wherein the safety device is designed such that the manipulatively applied mechanical energy is used to destroy the barrel.
- 15 15. The safety device according to any of claims 12 to 14, wherein the means for absorbing the essentially axial mechanical energy is part of the armouring itself.
16. The safety device according to any of the preceding claims, wherein the locking portion (20) is provided with at least one clamping means (22) that is lockable within the barrel (100) of a weapon such that the safety device cannot be removed from the barrel (100).
- 20 17. The safety device according to any of the preceding claims, wherein the locking portion (20) is provided with at least one clamping means that can be actuated from outside via an actuator (40a, 21), wherein unlocking is possible only if an inactivation is lifted by the control unit (10).
- 25 18. The safety device according to claim 17, wherein the actuator is designed such that it merely gives the user the necessary degree of freedom for an authorised actuation of the locking portion from outside and, if not activated, this degree of freedom cannot be used for removing or manipulating the safety device.
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19. The safety device according to any of claims 17 or 18, wherein the actuator is provided with a predetermined breaking point (29) that is designed and dimensioned such that the actuator is permanently inactivated in case of an unauthorised manipulation.
- 5 20. The safety device according to any of claims 17 to 19, wherein the armouring (40a) is part of the actuator.
- 10 21. The safety device according to claim 19 or 20, wherein an actuation can be established by rotating the armouring (40a).
22. The safety device according to any of claims 16 to 21, wherein the clamping means (22) comprises at least one expandable clamping jaw (23).
- 15 23. The safety device according to claim 22, wherein the clamping means (22) comprises at least one expanding means (24) that expands the clamping jaw(s) (23) upon actuation of the actuator.
- 20 24. The safety device according to claim 23, wherein the expanding means (24) is provided essentially within the clamping jaw (23) and comprises at least one wedge surface that is movable with respect to a respective surface of the clamping jaw (23) so that it can be expanded.
- 25 25. The safety device according to claim 23 or 24, wherein the expanding means (24) comprises at least one expanding thread (27) which can be moved axially with respect to the respective surface of the clamping jaw (23) by actuation of the actuator (40a, 21).
- 30 26. The safety device according to any of the preceding claims, wherein the clamping portion (20) is provided with at least one clamping means that is clampable within the barrel/cartridge chamber (100) of a weapon, wherein its clamping effect is increased as the force, such as tension, pressure and/or rotation, applied to an end accessible from outside increases.

27. The safety device according to any of the preceding claims, wherein an activation means (11, 25, 26) comprises an actuator (11) that is controllable via a control unit, a spindle (25) that is rotatable via the actuator (11) and a deactivation element (26) that is operable via the spindle (25), wherein, if operated (the safety device being in a state in which it cannot be removed), the deactivation element (26) prevents the expanding thread (27a) from being rotated.
28. The safety device according to claim 27, wherein a mechanical potential has to be overcome for operating the deactivation element (26).
29. The safety device according to any of the preceding claims, wherein the control unit (10) comprises electronic means (10) that essentially authenticates a user.
30. The safety device according to claim 29, wherein the electronic means (10) is supplied with energy from outside via an electric connection (12), preferably galvanically, capacitatively or inductively.
31. The safety device according to claim 30, wherein the authentication data are also exchanged via said connection (12).
32. The safety device according to any of the preceding claims, wherein a device is provided that inhibits/diverts the manipulatively applied electric energy such that no opening is possible.
33. The safety device according to claim 32, wherein the device inhibiting/diverting manipulatively applied energy comprises an element for blowing in case of manipulatively applied energy, which inhibits or interrupts the current supply.
34. The safety device according to claim 32 or 33, wherein the device inhibiting/diverting manipulatively applied energy is designed such that manipulatively applied energy is led past the actuator (11).

35. The safety device according to claim 32, 33 or 34, wherein the device inhibiting/diverting manipulatively applied energy is designed such that manipulatively applied energy is preset to be led to the actuator (11) such that it is operated towards inactivation.

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36. The safety device according to any of the preceding claims, wherein a second actuator (27b) and a second expanding thread (27b) are provided via which and via a respective inner thread in a second expanding cone (24b) said second expanding cone (24b) is axially movable and wherein said second expanding thread (27b) is rotatable via its inner end.

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37. The safety device according to any of the preceding claims, wherein a second locking portion (20b), which is at first separate from the remaining safety device, is insertable into and clampable or lockable within the barrel (100) of the weapon, wherein said second locking portion is no longer de-clampable/unlockable upon insertion of the first locking portion.

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38. The safety device according to claim 37, wherein the remaining safety device is insertable into the barrel (100) of the weapon up to the second locking portion (20b), wherein the remaining safety device can be clamped/locked with the barrel and/or the second locking portion.

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39. The safety device according to any of claims 37 and 38, wherein the second locking portion (20b) is designed such that it can be arranged within the cartridge chamber and the barrel (100).

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40. Operating means for a safety device according to any of the preceding claims, comprising:

coupling means (4, 5, 6) for coupling the operating means to a transmission means (40a, 40b) of the safety device (1) and for transmitting an authorisation request to the safety device (1) and/or a force for locking and/or unlocking or clamping and/or removing the safety device from the barrel (100) and/or the cartridge chamber.

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41. The operating means according to claim 40, wherein the coupling means (4, 5, 6) comprises an engagement means (5) and the transmission means is formed by an armouring (40a) of the safety device (1) so that the engagement means (5) can engage with and rotate the armouring (40a).
- 5 42. The operating means according to claim 41, wherein the coupling means (4, 5, 6) comprises contacting means (6) via which an authorisation means is transmitted to the safety device (1).
- 10 43. The operating means according to claim 42, moreover comprising gripping means (3) which a user can rotate and which subsequently transmits the rotation to the transmission means (40a) of the safety device (1) via the coupling means (4).
- 15 44. The operating means according to any of claims 40 to 43 which is capable of examining whether the safety device has been correctly inserted according to predetermined criteria by monitoring the mechanical parameters during operation and/or by reply from the control unit (10).
- 20 45. The operating means according to any of claims 40 to 44 comprising an electronic control means (2) that is programmable by a computer and, if necessary, transmits the authorisation request to the contacting means (6).
- 25 46. A method for securing a firearm against unauthorised use, in particular comprising a safety device according to any of the preceding claims, comprising the following steps:
- providing at least one locking portion (20);
- inserting the entire safety device and the locking portion (20) into the barrel and/or the cartridge chamber of the firearm;
- providing a control unit (10) authenticating the user and, if the user is authorised,
- 30 locking and/or unlocking or clamping the locking portion (20) in the barrel (100) of the firearm and/or detaching the safety device;
- transmitting an authentication code to the control unit; and

optionally locking and/or unlocking or optionally clamping the locking portion (20) and/or removing the safety device from the barrel.

47. A method for securing a firearm against unauthorised use, in particular comprising a safety device according to any of claims 1 to 45, comprising the following steps:
5 providing at least one locking portion (20);
providing a control unit (10) that is capable of authenticating a user and, if the user is authorised, locks and/or unlocks or clamps at least the locking portion (20) in the barrel (100) of the firearm and/or makes the safety device detachable; and
10 providing an activation means (26) which, upon authentication by the control unit (10), enables or prevents locking and/or unlocking or clamping and/or detachment via the transmission means (40a).
48. A method for securing a firearm against unauthorised use, in particular comprising a safety device according to any of the preceding claims 1 to 45, comprising the
15 following steps:
providing at least one locking portion (20);
inserting the safety device and the locking portion (20) into the barrel and/or the cartridge chamber of the firearm; and
20 providing a severance protection means (41) in the locking portion (20), wherein the severance protection means (41) comprises at least one inclined element (41) within the locking portion which is positioned and designed such that it at least partially radially expands the locking portion upon locking or clamping in case of an essentially axial force caused by manipulation so that the locking portion is locked
25 or clamped farther down in the barrel (100) and/or the cartridge chamber.